

Analysis of variables related to intrinsic motivation in a boys' physical education class

**Marc Cloes
Pascale Motter
Maryse Ledent
Maurice Piéron
University of Liège
(Belgium)**

In physical education settings, the development of intrinsic motivation in students is a central concern for every teacher. However, most studies have focused on isolated variables using quantitative approaches. The purpose of this study was to underline the existence of relationships between students' intrinsic motivation (assessed by dispositional factors) and individual/collective situational factors. A secondary school boys' class and its teacher were the subjects of the study. Questionnaires and interviews were used. Data were initially processed from the class point of view. Based on a cluster analysis determined by intrinsic motivation level, two groups of students were compared. Qualitative analysis was based on the answers of the two most and the two least motivated students of the class. Extracurricular practice (individual situational variable), teacher-students' interaction and mastery climate (collective situational variables) were identified among the factors related to students' intrinsic motivation. Inter-individual diversity of influencing variables was pointed out.

En éducation physique, le développement de la motivation intrinsèque des élèves constitue un centre d'intérêt privilégié de tout enseignant. Toutefois, la plupart des études portant sur la motivation se sont centrées sur des variables isolées et ont suivi une approche quantitative. L'objectif de cette recherche consistait à souligner l'existence de relations entre la motivation intrinsèque des élèves (mesurée par l'intermédiaire de variables dispositionnelles) et plusieurs variables situationnelles individuelles et collectives. Une classe de garçons du niveau secondaire et son enseignant ont été impliqués. Nous avons utilisé la technique du questionnaire et des interviews. Dans un premier temps, les données ont été traitées du point de vue de la classe. A partir d'une analyse par cluster reposant sur les niveaux de motivation intrinsèque, deux groupes d'élèves ont été constitués et comparés. Dans un deuxième temps, une analyse qualitative a été réalisée sur la base des réponses fournies par les deux élèves les plus motivés et les deux les moins motivés de la classe. La pratique sportive extrascolaire (variable situationnelle individuelle), l'interaction professeur-élèves et le climat de maîtrise (variables situationnelles collectives) ont été identifiés parmi les facteurs jouant un rôle dans la motivation intrinsèque des élèves. La diversité interindividuelle des variables qui influencent la motivation a été soulignée.

All around the world, studies focusing on physical activity of youth converge on a common result: adolescence is a critical period during which girls and boys become

gradually more inactive (World Health Organization, 1999). For physical education teachers, several problems emerge that have frequently been pointed out as the major variable of dissatisfaction among physical education teachers (Capel, 1993). However, when students are questioned about their motivation, their opinions tend to differ from those of teachers. For example, the results of a large European research program showed that students' attitude towards physical education was rather positive (Delfosse, Ledent, Carreiro da Costa, Cloes & Piéron, 1997). Differences between teachers and students opinions could be related to the fact that motivation is a multiform concept needing a better understanding. Consequently, it is appropriate to analyze the relationships between all components of motivation.

In the past two decades, there has been a strong trend for researchers to follow two main theories for studying this concept:

1. The goal achievement theory. Developing from the Nicholls' works (1984, 1989), this theory assumes that personal goals influence the thinking processes, feelings, and actions of individuals when they are involved in accomplishment situations. Two predominant achievement goal orientations have been identified: task and ego. People with a task orientation are concerned with demonstrating mastery in a defined activity while those with an ego orientation give more importance to demonstrating ability to others. A person can be at any level in one orientation, regardless of what the level in the other orientation might be (Goudas, Biddle, & Fox, 1994).
2. The cognitive evaluation theory as part of self-determination theory. Introduced by Deci and Ryan (1985) this theory hypothesized that the level of motivation can be assessed in a continuum from amotivation to intrinsic motivation, including extrinsic motivation. In this model, motivation varies according to changes in self-determination levels.

Intrinsic motivation is considered a central factor in promoting physical activity during childhood (Goudas & Biddle, 1994) and is probably predictive of persistence in sport participation (Duda, 1992). In physical education settings, intrinsic motivation has been linked to dispositional variables like perceived competence (Spray & Biddle, 1997), task orientation (Ntoumanis, 1998), attitude towards physical education (Fishbein & Ajzen, 1975) and importance given to physical education in school (Carreiro da Costa, Pereira, Diniz, & Piéron, 1997). The influence of several situational variables has also been pointed out (Ames, 1992; Chatzisarantis, Biddle & Frederick, 1999; Cury, Biddle, Famose, Goudas, Sarrazin & Durand, 1996; Duda & Hom, 1993). Situational variables can be individual (parents, extra-curricular sport activities, motives of participation...) and collective (peers, teacher and school characteristics, motivational climate, social environment).

In the field, students' motivation can be identified by several behaviors. Cloes, Ledent, Delfosse, and Piéron (in press) identified 12 categories of criteria perceived by PE teachers as indicating students' motivation. Some of them belong to typical aspects of intrinsic motivation: enjoyment, perceived effort... (McAuley, Duncan, & Tammen, 1989). Students' self-perception of usual behaviors can also provide evidence of their intrinsic motivation (see Figure 1).

Most studies on students' motivation in physical education have focused on isolated variables and/or used quantitative approaches (Spray & Biddle, 1997; Cury et al., 1996; Treasure & Roberts, 1995). Following Newton and Duda (1999), we considered that a qualitative approach could provide original and useful data. It would give some opportunities to better account for the large inter-individual variability of motivation in students within a class.

The purpose of this study was to underline the existence of relationships between students' intrinsic motivation, assessed by dispositional variables, and

individual/collective situational variables in a boys' class. A research design combining quantitative and qualitative data collection techniques was used.

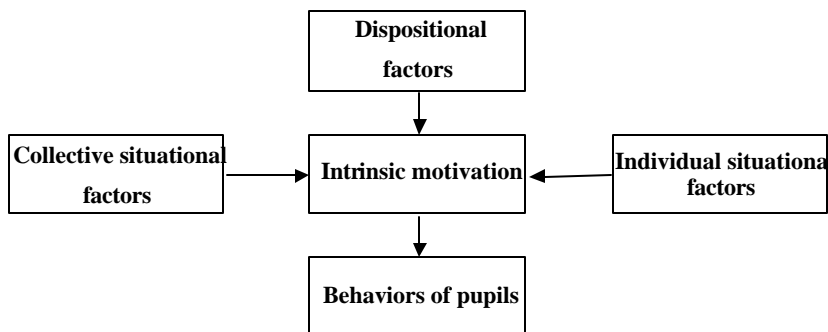


Figure 1. Working model of motivation

Method

Data processed in this paper were collected within a broader study aiming to analyze intrinsic motivation in nine secondary school physical education classes (four girls' classes and five boys' classes, grades 10 and 11). In this study, we focused on a boys' class identified as highly motivated. The level of class motivation was assessed based on students' answers to a questionnaire focusing on four dispositional factors (see below). Despite a poor socio-economic context, which is usually linked with low levels of motivation, this class showed the highest mean motivation score among the boys' classes, justifying its selection in the study. The class comprised 20 students all aged from 15 to 17. Their male teacher had an excellent reputation, due to his positive professional attitude and his experience as a pedagogical advisor and high-level coach.

The dispositional factors of students were self-assessed using four-level scales (Table 1). We selected: (a) the affective component of attitude towards physical education («Usually, physical education lessons in school... 4= I love, 3= I like, 2= I dislike, 1= I hate»), (b) the importance of physical educators («For me, physical education at school is... 4= very important, 3= important, 2= less important, 1= not important at all»), (c) the perceived competence («Usually, in physical education... 4= I am really able, 3= I am able, 2= I am weak, 1= I am really weak»), (d) the task orientation. The latter was selected because of the consensus on its relationship with intrinsic motivation (Duda, 1992). It was assessed by means of an instrument focused on the achievement goal orientation in PE (Walling & Duda, 1995). The main question was «I feel most successful in PE when...» followed by 16 items, eight concerning the task orientation («I do my very best» ...) and the other the ego orientation («I score the most points»...). Students ticked their level of agreement to each proposal (from 4= I strongly agree to 1= I strongly disagree). The psychometric qualities of the instrument focused on achievement orientations were assessed through a factor analysis. In accordance with Piéron, Ledent, Delfosse, and Cloes (1997), the latter allowed the identification of six items related to the task orientation and seven to the ego orientation. The mean score for the six task orientation items was the fourth dispositional factor.

All the dispositional factors were processed in a hierarchical cluster analysis completed by the SPSS/PC+ system to determine the existence of groups differing in their intrinsic motivation level. In comparing groups using the t-student test, a significance level was accepted for p values equal or lower than .05.

Students assessed four individual situational factors (talking about PE with his parents, parents' opinions about PE, importance to be good in sport and frequency of extracurricular sport practice) and six collective situational factors (facilities quality and availability, equipment quality, opportunities devoted to PE at school, perceived importance of PE in staff members, importance of failure in PE) (Table 1). As the relationship between attitude in physical education and attitude in sport was not clearly established, «attitude towards extracurricular sport» was considered as an individual situational factor. Except for frequency of the latter, we used four-level scales. Frequency of practice was assessed through a seven choice scale (1 = never, 2 = less than once a month, 3 = once a month, 4 = once a week, 5 = two to three times a week, 6 = four to six times a week, 7 = every day).

Satisfaction and perceived behaviors during PE lessons was the last group of variables to be collected. Students had to assess on four-level scales (from 4= always to 1= never) the following aspects: (a) how often they misbehave during a lesson, (b) how often they give excuse notes, (c) what is their satisfaction level and (d) their perception of improvement, (e) involvement, (f) enjoyment and (g) concentration.

The two most motivated and the two least motivated students were identified by the cluster analysis. The teacher and these students were interviewed after a team sport lesson, following a traditional semi-structured design for collecting additional information. Moreover, the technique of the «explicit interview» (Vermersch & Maurel, 1997) was used to expand the discussion. A characteristic of this technique consists in avoiding the «why» question. Students were interviewed about (a) their attitude towards physical education, (b) the lesson content, (c) their interaction with the teacher, (d) the class climate, (e) their parents' attitudes and (f) their extracurricular sports activities. With the teacher, we focused on (a) his perception of the lessons, (b) lessons content and the teaching relationships, (c) the place of physical education in the school, (d) his expertise level and (e) the motivational level of the four target students and its behavioral expression.

Several measures were taken to standardize the procedure of collecting data: training sessions and a pilot study were carried out. Confidentiality of the answers was guaranteed. Each interview was tape-recorded and transcribed. Key words were identified and classified in existing categories (Mucchieli, 1979). The inter-analyst reliability ranged from 81.4% to 85.7% of agreement.

Results and Discussion

First, we will discuss the analysis of the quantitative data, aiming to define the class' motivation characteristics. The second step will focus on the qualitative approach and will concern the four target students.

Analysis of the Class' Motivation

In this part of the study, we will use only answers provided by the students through closed questions. Except for perceived competence, the average score of each dispositional factor reached a rather encouraging level, confirming that the class was really highly motivated (Table 1). Due to unanswered questions, only 16 students out of 20 were accounted for in this treatment.

The global picture of the class clearly showed its motivation. However, it was interesting to verify the homogeneity of the motivation among students. Delfosse et al. (1997) showed that, in several European countries, most 15-year-old boys liked physical education. Kim and Gill (1997) found similar scores for task orientation.

The cluster analysis treatment clearly identified two distinct groups (Table 1). Group A students liked physical education more, considered it as more important and assessed their competence at a higher level than those of group B. Even if no statistical difference appears between the most and the least motivated students, group A had a score above 3 (on 4) in task orientation. The differences confirm findings in studies mentioned earlier. It seems logical that all students in a class cannot be equally motivated by subject matter.

As a consequence teachers should individualize their intervention. Moreover, they have to develop specific strategies to fight the students' lack of motivation. As the latter leads to poor performance, the students' level of satisfaction and perceived competence could decrease until finally, the learner enters a vicious circle.

Individual situational factors. Although differences were not significant, it could be pointed out that some motivated students talked often of physical education at home and that their parents were perceived as putting more emphasis on the physical education course than those of less motivated students. Scores of these aspects were always equal or lower than 2 in this group, underlining that PE is not considered as an important matter at home (Table 1).

Group A students considered that it is more important to be good in sport than their less motivated classmates (3.4 Vs 2.2; $t=3.7$, $p<.05$). Especially for boys, sport can be a means of promoting self-esteem. It seems logical that they establish links between sport and physical education. Moreover, extracurricular activity characteristics tended to differ in both groups. In group A, all students were practicing sport while two out of six of the least motivated students did not practice at all. Nevertheless, the difference between groups was not significant (Table 1).

Collective situational factors. The most motivated students seemed more demanding about equipment, facilities and conditions of practice (Table 1). They critically assessed the situation of their school, showing interest towards the opportunities to practice. Nevertheless, the only significant difference between both groups dealt with the quality of the equipment. Most motivated students expected less than their classmates (2.2 Vs 3.0; $t=2.1$, $p=.0541$). They would like to get some opportunities to practice different sports but not necessarily with the best equipment.

No difference was found regarding the importance given to physical education in the school. Scores were around 2.2, emphasizing the poor opinion that people have about physical education.

Satisfaction and perceived behaviors. Both groups felt that their usual behaviors were rather positive (Table 1). Students felt that they rarely misbehave and rarely give excuses for not participating. They assessed rather well the content of the lessons and their improvement, involvement, enjoyment and concentration.

In comparison with that of group B students, the self perceived behavior profile of the most motivated students corresponded more to what the teachers consider as motivation within the class. Despite the low number of subjects, two differences (excuse note and enjoyment) were significant in favor of most motivated students. This finding tends to confirm the relationship between these variables and intrinsic motivation. When intrinsic motivation is high, it is logical that practicing physical activity is perceived as pleasant. In these conditions, there is no reason for participants to avoid practice. This also validates the assessment of intrinsic motivation through dispositional factors.

In summary, this class could be divided in two groups on the basis of dispositional variables. However, only a few differences were identified in individual and collective situational factors. Moreover, satisfaction and perceived behaviors were pretty similar. However, it is worth noting that the few differences were in favor of the most intrinsically motivated group. At this point of the discussion, it is important to remember that we worked with a boys' class and that, in comparison with girls, boys are usually characterized by a more positive attitude towards PE (Silverman & Subramaniam, 1999). Moreover, this class was selected according to its high level of motivation. As a consequence, many differences between the most and least motivated groups could not be expected. The meaning of existing differences needs thus to be considered with caution.

In dealing with the problem using qualitative analysis, the next section intends to provide more information about existing links between intrinsic motivation, situational factors and perceived behaviors.

Table 1
Individual scores (Group A: Most motivated students; Group B: Least motivated students; * p<.05; **p<.001)

	Group A											Group B							AVsB t/p
	John	Ted	S3	S4	S5	S6	S7	S8	S9	S10	M±SD	S11	S12	S13	S14	Mike	Kevin	M±SD	
Dispositional factors																			
Attitude towards PE	4	4	4	4	4	4	4	3	4	3	3.8±.4	3	2	3	3	1	1	2.2±1	4.6/**
Importance of PE	4	4	4	4	4	3	3	4	4	2	3.6±.7	2	3	2	2	2	2	2.2±.4	4.4/**
Perceived competence	4	4	3	3	2	4	3	3	2	3	3.1±.7	2	2	2	2	2	1	1.8±.4	4.1/**
Task orientation	4.0	3.0	3.7	3.0	4.0	2.5	3.0	2.8	2.7	3.5	3.2±.5	3.3	3.2	2.8	2.5	2.5	2.3	2.8±.4	ns
Individual situational factors																			
Talking about PE with parents	1	1	4	2	2	2	1	3	2	2	2.0±.9	1	1	2	2	1	1	1.3±.5	ns
Parents' opinions about PE	1	3	2	1	2	2	2	2	3	3	2.1±.7	1	2	2	2	2	2	1.8±.4	ns
Importance to be good in sport	4	3	4	3	4	4	3	3	3	3	3.4±.5	3	3	2	2	2	1	2.2±.8	3.7/*
Frequency of practice	6	7	5	4	2	5	5	2	5	6	4.7±1.6	5	4	4	1	3	1	3.0±1.7	ns
Collective situational factors																			
Facilities quality	1	2	4	1	1	2	4	2	1	1	1.9±1.2	1	2	3	3	3	2	2.3±.8	ns
Facilities availability	1	2	3	1	1	3	4	2	2	2	2.1±1.0	2	2	2	3	2	3	2.7±.5	ns
Equipment quality	1	3	3	1	1	3	3	3	2	2	2.2±.9	3	3	3	3	3	3	3.0±.0	2.1/*
Opportunities of PE practice	1	2	3	3	3	4	3	2	3	3	2.7±.8	2	3	3	3	3	3	2.8±.4	ns
Importance of PE (staff)	1	1	1	4	4	1	1	2	2	4	2.1±1.4	2	1	3	2	2	3	2.2±.8	ns
Importance of PE failure	1	1	3	3	1	2	3	3	3	2	2.2±.9	2	2	2	2	2	3	2.2±.4	ns
Satisfaction and perceived behaviours																			
Misbehaviour	1	3	4	3	1	2	3	3	3	4	2.7±1.1	4	3	3	3	3	1	2.8±1.0	ns
Excuse note	4	3	4	4	4	4	3	4	4	4	3.8±.4	3	4	3	3	3	1	2.8±1.0	2.9/*
Satisfaction	3	3	4	3	4	2	2	4	3	3	3.1±.7	3	3	3	3	3	3	3.0±.0	ns
Improvement	3	3	3	3	3	3	3	3	3	3	3.0±.0	3	3	3	3	3	3	3.0±.0	ns
Involvement	4	3	4	3	4	2	3	3	3	3	3.2±.6	3	2	3	3	3	2	2.7±.5	ns
Enjoyment	4	3	4	4	4	3	3	3	4	3	3.5±.5	2	3	2	3	4	2	2.7±.8	2.5/*
Concentration	3	3	3	4	4	2	3	3	3	3	3.1±.6	2	4	3	3	3	2	2.8±.8	ns

Analysis of the Four Target Students

From their scores in dispositional factors items, John and Ted were selected as the most motivated students while Mike and Kevin were chosen as the least motivated ones (Table 1). John and Ted belong to group A while the others were in group B. It was clearly established that they were at opposite ends of a continuum.

The dispositional factors assessment was validated through students' answers to open questions dealing with their attitude towards physical education. John liked the course: «I like sport: one is with friends, one can laugh except when one is puffed». For him, it is important to be a good achiever because he likes doing sport. He is a student working for his own sake and for the fun. He did not consider anything else in the course. Ted appreciated PE: «It's fabulous, we have fun with friends». If Mike was not too critical of PE, he considered that it couldn't be possible to fail in that course: «Failing in this course, I can't imagine it!». Kevin had a rather negative opinion. He said that physical education is secondary compared to other subject matters.

In this part of the study, we will deal with: (a) the teacher's opinion about motivational level of the target students, (b) both theoretical and personal purposes that these students assigned to PE, (c) the analysis of the individual situational factors, (d) the analysis of the collective situational factors, (e) the students' behaviors as seen by their teacher, and (f) a brief interviewer's report. A graphic representation will be proposed to complete this qualitative analysis.

Teacher's opinion. As seen by the teacher, John (the most motivated student) «... is a very athletic guy, highly motivated, moreover he appreciates me and, thus, inevitably, he likes the course. It's often like that with the kids. ». In this extract, it is possible to underline the link between (a) the positive interaction between the teacher and the student, and (b) the positive attitude of John towards physical education.

«Ted is someone who is very athletic and someone very good. He encourages the others». Giving importance to others and encouraging them are both characteristics of a task orientation.

«Mike doesn't like the course because he is obese and feels clumsy. ». This boy was identified as having a low perceived competence due to his morphology.

«Kevin is also too big. At the beginning of the year, I built a negative opinion of him. I thought that he would fiddle a bit during the whole year. After that, the activity changed and it went better and better». This student characterized by a weak perceived competence tended to avoid activities where he did not perform well in order to protect his self-esteem.

The information given by the teacher broadly confirms the data gathered by the questionnaire. It shows that he knows his students well and that he is aware of their characteristics. However, analysis of the students' interviews should provide a more accurate picture of the relationship between all variables.

Students' theoretical and personal purposes in physical education. The answers of Ted, Mike and Kevin were similar. They emphasized the importance of its social aspect: «One must learn team spirit» (Ted); «In PE, it's important to learn (...), the respect of the other, self confidence» (Kevin). These values are very important, particularly in a school where violence and vandalism are so prevalent that the culprits' name are written on the entrance's walls. John gave priority to sport: «One must learn new sports». That opinion is similar to Mike's one: «PE, it's to learn different sports, learning techniques and improving one's physical fitness».

All target students wished to really learn one or several sports. John's expectations corresponded to the objectives that he assigned to physical education. Kevin wished to learn one sport completely while Ted and Mike liked to discover several sports. Kevin believed that physical education should propose activities as in a club. This unrealistic wish could explain his lack of motivation. Mike's expectations corresponded well to the objectives that he allotted to the course. This would explain his positive attitude despite a low motivation as pointed out earlier.

Individual situational variables

1. Extracurricular sport practice

1.1 Type and frequency of practice

John has played soccer in a club since he was five-year-old. He goes dancing with his friends three times a week. Ted does not practice sport for several reasons out of his will. That point will be developed later. For three months, three times per week, Mike has been involved in bodybuilding sessions. Before that, he played basketball. Currently, Kevin plays basketball with friends and bikes 20 times per week to go to school. Sport practice cannot be directly linked to the intrinsic motivation level towards PE.

1.2 Motives for participation

Several aspects were proposed at that point:

- 1) What urged you to practice? John and Kevin did not give special reasons to explain the origin of their practice: «I would like to do one sport». Between 5 and 17, Ted practiced a lot of sports: handball, volleyball, soccer, badminton, and tennis. He wants to stay fit and likes sport. Mike said that he wants to be with his friends. Following Vallerand and Blanchard (1998), the motive mentioned by John and Kevin allows considering that they were on the intrinsic side of motivation. Ted's motives focused on stimulation intrinsic motivation while those of Mike concerned introjected regulation.
- 2) Which factors led you to leave sport? Ted dropped out for family problems: «Now I must think about my studies because I have some family problems and I don't have enough money». When thinking about his future, he pointed out that his dropping out was not a personal choice: «I would like to be a physical education teacher». His drop out seems really out of his wishes and we can consider that he is highly intrinsically motivated.
- 3) For which reasons do you currently practice ? John, Mike and Kevin propose the same motives for participation: friends and enjoyment. John adds: «I want more to have fun than to make a career». John and Mike also practice a sport to remain healthy and fit. All three students seemed reinforced by an intrinsic motivation to experience stimulation (Vallerand & Bissonnette, 1992).

1.3 Practicing sport in adulthood

Another interesting approach to students' attitude towards extracurricular sport is to explore their intent to practice sport in the future. When we asked them if they will practice sport at 30, John and Mike considered sport as a means to stay fit but without practicing it regularly and in an organization: «Yes, I'll do some jogging to stay fit». We find here the motivation which shows during their extracurricular sport. Remember that Mike is a low motivated student. This objective could not be achieved within the physical education program. As it was noted above, Ted wanted to become a physical education teacher. Thus, «I'll do that forever and, moreover, I'll teach it». Kevin was categorical: «No, I would be very surprised because I have fun now, but later I would have many other things to do». He placed sport in the «Recreation» category and he felt that later enjoyment would be found somewhere else.

2. Parents

2.1 Importance that parents give to physical education

John, Mike and Kevin shared similar perceptions. Following them, their parents consider physical education as less important than the other subject matters or not important at all. John says: «They give it (PE) no importance because, in any case, they never look at my grades». Some answers support an overall lack of interest of parents towards school: «They let me chose but they recommend me to continue». Kevin's parents say «It isn't important because later, I will not really need physical education». They consider that secondary school is just there to prepare the future student's career. Ted's parents give as much importance to physical education as to the other courses: «It's a course as the others are». They put physical education within the overall preparation and keep in mind the interest that all courses may have for their child.

2.2 Parents' interest in extracurricular sport

This aspect interested John and Mike's parents. They urged them to regularly practice their sport activities. They asked questions about what they do and pay for what their child needs for practicing. John added: «They come to see me, they accept to drive me to the field». Both students were satisfied by their parents' interest: «It's good like that» (Mike). Without the opportunity to practice sport outside the school, Ted could not answer us while Kevin's parents were described as indifferent to his activity: «When I say that I go to play basketball, they say OK, go. But for me, even if they don't care about it, it isn't important because I only play sport for the fun». Kevin took a different attitude than his parents. He evoked an intrinsic motive linked to participation stimulation. He practiced just for his own satisfaction. Even, without family support, he found the interest to practice sport.

Collective Situational Variables

Physical education teacher

1. Students' perception of the teacher

The four subjects share a similar opinion and praise their teacher. Only two negative comments were heard: «He should be a little less fussy about the rules» (Ted) and «Mister –Teacher's name- should be a little less strict about the respect of schedules and equipment» (Mike). John mainly used his friendly relationship with the teacher and said: «One laughs a lot. He is always in a good mood and even if he is in a bad mood, after five minutes, he laughs all the same. He is a good teacher. He is cool but at the same time, he gives his course well and there is discipline. He has created a good atmosphere. He speaks about things that have nothing to do with the course and it's important. We have good contacts with him outside the class». The three other students agreed on the quality of the relationships, on the opportunity for joking and on his availability. Ted added that: «He always says some words to encourage, he says when we are improving; he also encourages the weakest». Kevin shared this opinion. It is clear that the teacher develops a mastery climate within his class. This finding can be related to teacher's personal characteristics like his professional attitude and expertise. It underlines the potential role of the teacher in developing students' motivation.

2. Students' perception of physical education teachers in general

John, Mike and Kevin shared a positive picture of PE teachers and pointed out that the teacher-students' relationship is easier in physical education: «They are more friendly» (Mike); «I think that they are more available for discussion» (John); «They don't teach as classroom teachers» (Kevin). Here Ted gave an answer contradictory to his earlier opinions: «In general, they are good but they are not teachers like others because they teach us things that we will not use later».

Peers

1. Atmosphere between classmates

For all target students, this factor was good. Mike and Ted said that the class is a nice group of friends meeting also out of the school. However, John and Kevin considered that they did not belong to the group meeting outside the school time. Concerning John, this is surprising according to his sociability and permanent search for enjoyment and friendly relationships. He would meet other people to go out or to do sport. This finding is more logical for Kevin who is very individualist: «Me, I'm not so interested in going out with others». Differences among students do not correspond to the analysis of the motivation's characteristics.

2. To be afraid of shame when failing an exercise

John, Ted and Kevin reacted in the same way. They asserted: «I'm not afraid: I laugh with them (the other students)» (John); «It's a joke between friends, it has no

consequences» (Ted). However, Mike confessed: «It depends, OK, but when I fail, I don't like others to see it». His weak perceived competence leads him to continued stress, which could disturb the development of some motivation for the activity.

The teacher was well aware of Mike's reactions. He said: « There are guys being ... inhibited because they are afraid of doing wrong. It's hard, yet, you must be behind him (Mike) to badger him, because otherwise he tries to withdraw and ... inevitably, when he is withdrawing, he doesn't get any passes. Nobody plays with him and hence he becomes bored.»

Physical education

1. Opinion about the content of lessons

The reactions of the students differed quite a lot and provided a clear picture of their personality. With his collective approach and his need of others, John preferred gamelike situations: «I like games two against two and even more, six against six, because one plays one against the other and one can laugh doing passes together». However, he also said «I don't like exercising alone». Athletic, competitive and searching for learning objectives, Ted had some preferences: « I like games, to play and to improve my skills». He regretted that the program always proposed the same sports. Mike, unconfident and not persevering, preferred one against one situation. His reasons were clear: «It's easier for me, I feel better because when one fails, I think that it's my responsibility and here I am just alone face to face with another». He gave some details about what skills he does not appreciate: «I don't like spikes and underarm passes because I can't really do them». He seemed to avoid all situations in which he could fail and show his weaknesses to others. Kevin, always solitary but determined, said: «Me, I don't like competition forms, to play in a team, the rules and underarm passes because I can't do it». According to the students, it seemed that the teacher planned a content oriented towards play and learning. That would contribute to develop a mastery class' climate aiming to induce satisfaction (Walling, Duda, & Chi, 1993) and enjoyment (Seifriz, Duda, & Chi, 1992) in students. The least motivated students seemed insensitive to this approach.

2. Equipment, facilities and conditions of practice

Except Mike who was rather satisfied, students clearly regretted the conditions in which the lessons were organized. John has got a very poor opinion of the equipment. We could assimilate this reaction to teenagers' typical attitudes. As seen before, the teacher described him as very motivated but «the problem is that, and it's quite paradoxical, he comes from time to time without equipment, because he is superficial, unembarrassed...». This comment underlines John's current attitude: he likes something a lot but reacts as not being concerned about it.

Student's Behaviors as Seen by their Teacher

«John is always there, he is involved whatever the activity even if he sometimes shows a relaxed attitude.» The teacher also added: «He was present, he was working hard. It was in a positive way, always smiling, always ... er ... not soured at all, well, whatever the activity.»

«Ted is smiling and always ready to do something. With him, well, there's no problem ... we are playing basket, volley. He puts on a spurt, you clearly see that he already has good technical abilities, he puts on a spurt, he's well, he's happy, he's smiling, he's encouraging. Sometimes he gives in but, usually, he likes doing sport.»

«Mike is afraid to do wrong. He works during the lessons because he is afraid of my authority while Kevin's involvement depends on the activity. Both guys have weight problems, thus they don't like PE. Sometimes, they accept it with difficulty because if it's an activity where you run, they're the last to arrive and if it's a ball sport with moves, they don't feel competent.»

«I'm trying not to have elitism inside the group and I'm trying to treat everybody equally. I remember that with Kevin, I had a rather negative opinion during the first

month because he came supposedly injured. I had a certificate, but it was dragging on. Here, well, he was taking part in the beginning ... he ... not made a mess but he wasn't motivated. »

Teacher's analysis did not differ much with students' perception of their own behavior (Table 1). John's involvement and Kevin's lack of interest for PE appeared in both data sets. John's enjoyment and Kevin's lack of enjoyment were also confirmed. On the contrary, the perceptions of satisfaction and improvement were more contrasted in the teacher's analysis than in the students' assessment. Students could have met some difficulties in assessing their behavior objectively. Interviewing students about their behavior is an interesting approach to study these differences.

Interviewer's Report

During our visits to the schools and the interviews, informal information was gathered through repeated contacts with the subjects. From the interviewer's point of view, even if John behaved like a «macho», he was perceived as having a large sense of the group, a need for the others but also a strong personality and the will to do well and learn... what he liked. Despite of a complex family context, Ted was someone with an open mind, with a sport attitude, who wanted to learn and was concerned about others. Mike seemed lifeless, with a low fighting spirit and very lazy. For him, life goes like that and we will see! Kevin was dynamic, individualist and knew where his priorities were. These opinions reinforce the picture of the students' intrinsic motivation built through data gathered with the students and the teacher.

Graphic Representation of the Qualitative Analysis

Figure 2 summarizes all findings provided by the analysis of answers given by the four target students. It focused on the positive relationships showed between intrinsic motivation and related factors. We selected only items indicating interesting perspectives for development. They were identified by key words in students' answers. Numbers indicate which students are concerned by the considered link.

These findings confirm that teacher-students interaction (collective situational factors) and extracurricular sports (individual situational factors) are frequently connected to intrinsic motivation.

Conclusion

This study aimed to combine quantitative and qualitative data to assess the relationship between students' intrinsic motivation and individual/collective situational variables. Intrinsic motivation was assessed through dispositional variables.

In a globally well-motivated boys' class, it was possible to identify two groups of students varying according to their level of intrinsic motivation. Individual and collective situational variables did not differ significantly between both groups. The most motivated students enjoyed the PE lessons more often than their classmates.

The qualitative analysis based on interviews of the teacher and four selected students provided more details concerning the relationships between intrinsic motivation and individual situational variables (extracurricular practice) or collective situational variables (teacher-students interactions and mastery climate). All students underlined the selection of task-oriented content and the development of a good atmosphere within the class as positive elements.

Students' interviews pointed out that motivation of each student depended on the combination of a large array of factors. It seems that no single model can exist. Some factors might play a determining role in an individual while they could be inoperant in another.

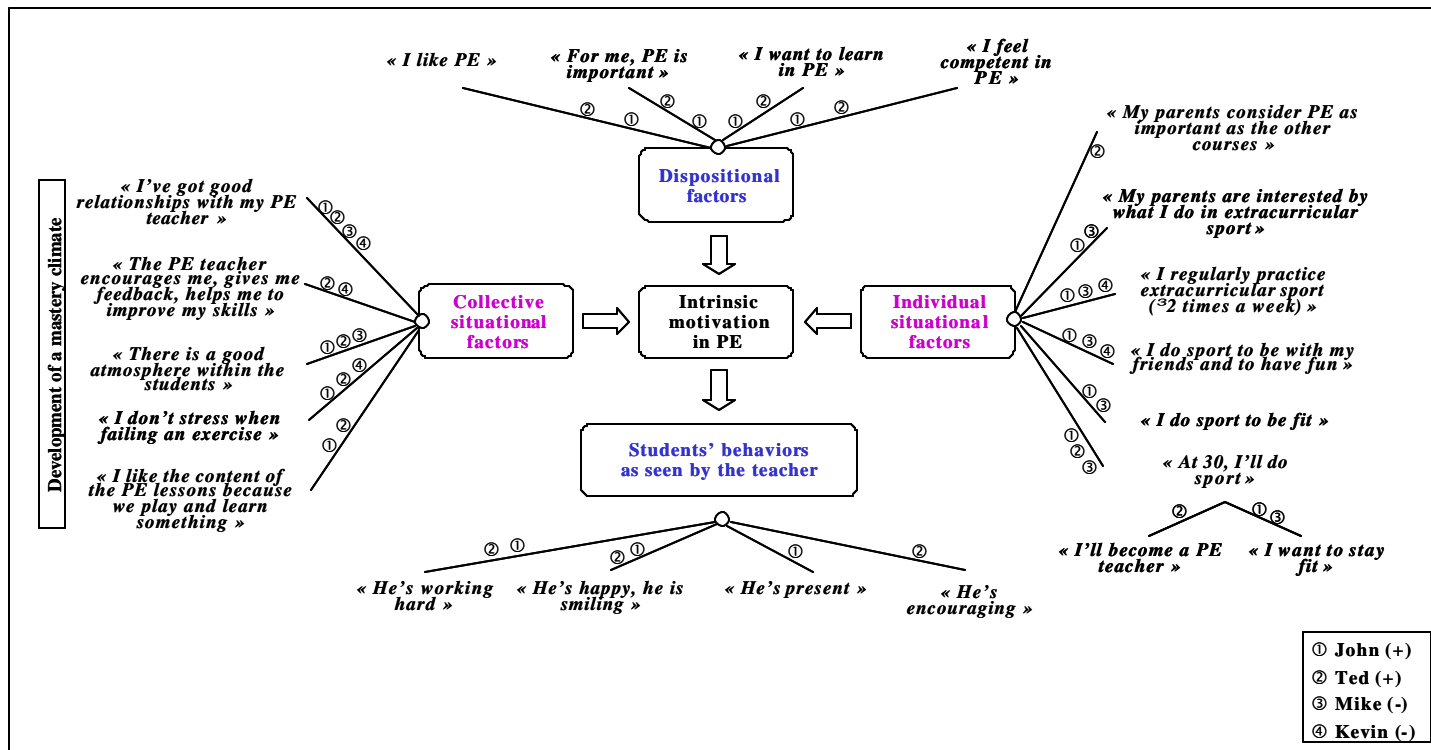


Figure 2. Preference links between intrinsic motivation and related factors

References

Ames, C. (1992). Achievement goal, motivational climate, and motivational processes. In G.C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 161-176). Champaign, IL: Human Kinetics.

Capel, S. (1993). Anxieties of beginning physical education teachers. *Educational Research*, 35(3), 281-289.

Carreiro da Costa, F., Pereira, P., Diniz, J., & Piéron, M. (1997). Motivation, perception de compétence et engagement moteur des élèves dans des classes d'éducation physique. *Revue de l'Education Physique*, 37(2), 83-91.

Chatzisarantis, N., Biddle, S.J.H., & Frederick, C. (1999). Self-determination theory and exercise behaviour: A theory of intentions and behaviours or a «theory» of theories? *Journal of Sport Sciences*, 17(7), 595-596.

Cloes, M., Ledent, M., Delfosse, C., & Piéron, M. (in press). Physical education teachers' perception of pupils' motivation. *Proceedings of the 2000 International Conference for Physical Educators. Innovation and application of physical education and sports science in the new millenium. An Asian-Pacific perspective*. Hong Kong, July 2000.

Cury, F., Biddle, S., Famose, J.P., Goudas, M., Sarrazin, P., & Durand, M. (1996). Personal and situational factors influencing intrinsic interest of adolescent girls in school physical education: A structural equation modeling analysis. *Educational Psychology*, 16, 305-315.

Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Delfosse C., Ledent, M., Carreiro da Costa, F., Cloes, M., & Piéron, M. (1997). Les attitudes de jeunes Européens à l'égard de l'école et du cours d'éducation physique. *Sport*, 159/160, 96-105.

Duda, J.L. (1992). Motivation in sport settings: A goal perspective approach. In G.C. Roberts (Ed.), *Motivation in sport and exercise* (pp 57-91). Champaign, IL: Human Kinetics.

Duda, J.L., & Hom, H.L. (1993). Interdependencies between the perceived and self-reported goal orientations of young athletes and their parents. *Pediatric Exercise Science*, 5, 234-241.

Fishbein, M. & Ajzen, I. (1975). *Beliefs, attitude, intentions and behaviour: An introduction to theory and research*. MA: Addison-Wesley, Reading.

Goudas, M., & Biddle, S.J.H. (1994). Perceived motivational climate and intrinsic motivation in school physical education classes. *European Journal of Psychology of Education*, 9, 241-250.

Goudas, M., Biddle, S.J.H., & Fox, K. (1994). Achievement goal orientations and intrinsic motivation in physical fitness testing with children. *Pediatric Exercise Science*, 6, 159-167.

Kim, B.J., & Gill, D.L. (1997). A cross-cultural extension of goal perspective theory to Korean youth sport. *Journal of Sport and Exercise Psychology*, 19, 142-155.

Luts, K., Ledent, M., Cloes, M., & Piéron, M. (1999). Perceptions de compétence et de comportement par des élèves considérés comme les « meilleurs » et les « plus faibles » en éducation physique. In G. Carlier, C. Delens, & J.P. Renard (Eds.), *Actes du colloque AFRAPS-EDPM «Identifier les effets de l'intervention en motricité humaine »*. CD-ROM. Louvain-la-Neuve: AFRAPS-EDPM.

Mc Auley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*, 60, 48-58.

Mucchielli, R. (1979). *L'analyse de contenu des documents et des communications* (3e édition). Entreprise Moderne d'Édition. Librairies techniques. Éditions ESF.

Newton, M., & Duda, J.L. (1999). The interaction of motivational climate, dispositional goal orientations, and perceived ability in predicting indices of motivation. *International Journal of Sport Psychology*, 30, 63-82.

Nicholls, J.G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, 91, 328-346.

Nicholls, J.G. (1989). *Competence and accomplishment: A psychology of achievement motivation*. Cambridge, MA : Harvard University Press.

Ntoumanis, N. (1998). Emotions and achievement goals in physical activity: A meta-analysis. *Journal of Sports Sciences*, 16, 395-396.

Piéron, M., Ledent, M., Delfosse, C., & Cloes, M. (1997). Une étude du style de vie de jeunes dans l'Union Européenne. Qu'en conclure et quels enseignements en tirer? *Sport*, 159/160, 106-108.

Seifriz, J.J., Duda, J.L., & Chi, L. (1992). The relationships of perceived motivational climate to intrinsic motivation and beliefs about success in basket-ball. *Journal of Sport and Exercise Psychology*, 14, 375-391.

Silverman, S., & Subramaniam, P.R. (1999). Student attitude toward physical education and physical activity. A review of measurement issues and outcomes. *Journal of Teaching in Physical Education*, 19(1), 97-125.

Spray, C.M., & Biddle, S.J.H. (1997). Achievement goal orientations and participation in physical education among male and female sixth form students. *European Physical Education Review*, 3(1), 83-90.

Treasure, D.C., & Roberts, G.C. (1995). Applications of achievement goal theory to physical education: Implications for enhancing motivation. *Quest*, 47, 475-489.

Vallerand, R.J., & Bissonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality*, 60(3), 599-620.

Vallerand, R.J., & Blanchard, C. (1998). Education permanente et motivation: contribution du modèle hiérarchique de la motivation intrinsèque et extrinsèque. *Education permanente*, 136(3), 1-20.

Vermersch, P., & Maurel, M. (1997). *Pratiques de l'entretien d'explicitation*. Collection Pédagogies. ESF Editeur.

Walling, M.D., Duda, J.L., & Chi, L. (1993). The perceived motivational climate in sport questionnaire. *Journal of Sport and Exercise Psychology*, 15, 172-183.

World Health Organization (1999). *Health promotion. Active living. The challenge ahead*. <http://www.who.int/hpr/active/challenge.html>

To contact the authors: Marc.Cloes@ulg.ac.be